



Repair
Manual
RM-11

Tire Repairs

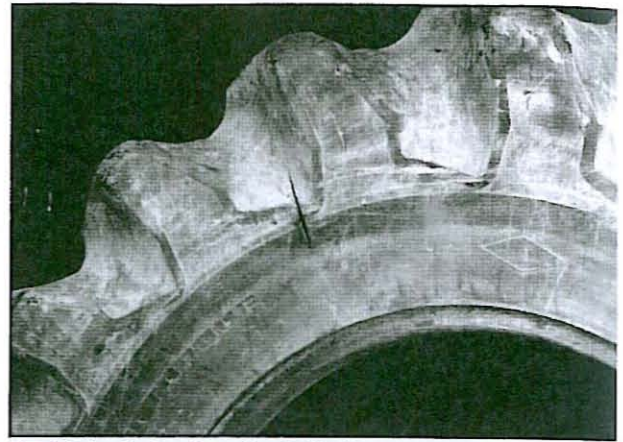
Section
Repair Of
Agricultural
and
Skidder Tires
Using A
BP[®]
Bias Ply
Repair Unit

TECH BP® BIAS PLY TIRE REPAIRS

Tech BP tire repairs can be used on tubeless or tube-type tires. They offer excellent flexibility, greater strength, superior construction and have been proven safe and dependable by millions of on-the-road and off-the-road miles. All Tech bias repairs are manufactured with a ply of rubber between the fabric and cushion gum which acts as a float or shock absorbing ply. Repair unit construction allows for easy application and enables repairs to be made closer to the



Cat. No.	Description	Box Qty.	Dim. (inches)	Dim. (mm)	Plies
310	0OT	50	1¼	30	1
311	1OT	25	2¼	60	1
311T	1OT in plastic tub	80	2¼	60	1
312	2OT	20	3	75	1
313	3OT	10	3¾	90	2
314	4OT	10	5	125	2
603	BP-3	10	4 x 4	100 x 100	2
604	BP-4	10	5½ x 5½	130 x 130	4
605	BP-5	10	6½ x 6½	165 x 165	4
606	BP-6	5	9½ x 9½	240 x 240	6
620	BPT-0	10	8 x 8	200 x 200	4
621	BPT-1	5	9 x 9	225 x 225	4
622	BPT-2	5	11 x 11	275 x 275	4
623	BPT-3	5	15 x 15	375 x 375	4
624	BPT-4	5	9 x 9	225 x 225	6
625	BPT-5	5	11 x 11	275 x 275	6
626	BPT-6	5	15 x 15	375 x 375	6



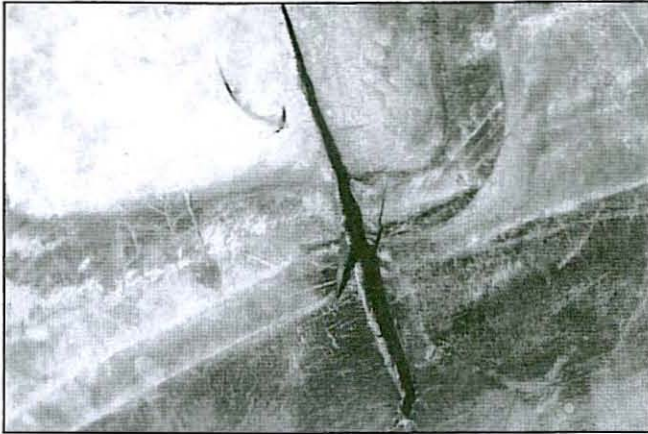
1 If the tire has been liquid filled for ballast or has accumulated water for any period of time, remove all liquid and allow the tire to dry out for a minimum of 24 hours. The tire *must* be dry before a thorough inspection can be performed.

tire bead, eliminating the need for a separate sidewall repair unit. These repairs are also designed to have excellent air retention when used in tubeless tires.

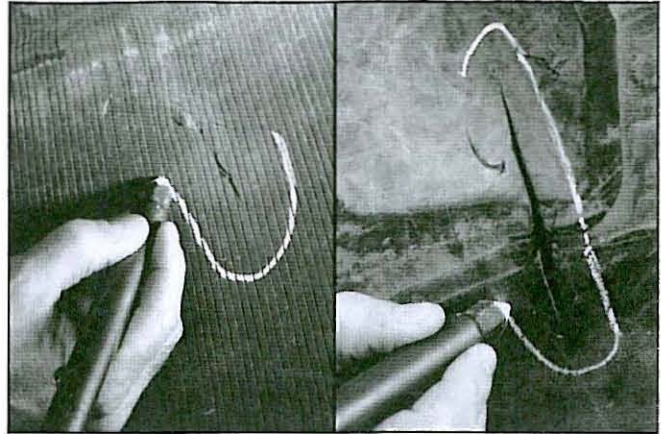
SECTION REPAIR OF BIAS PLY AGRICULTURAL AND SKIDDER TIRES

The following is the recommended repair procedure for damage to the crown, shoulder and sidewall area in bias ply agricultural and skidder tires.

This procedure is recommended if the curing system being used is a spotter. With this type of curing system, the repair is applied chemically after the skive fill has been cured.



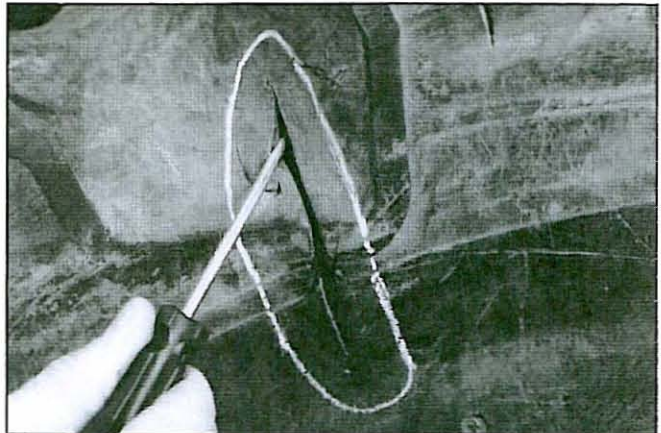
2 The first step in this or any other tire repair is a complete inspection of the tire. The tire should not be repaired if any of the following conditions or injuries are present:* The repair area should have good lighting both inside and outside of the tire.



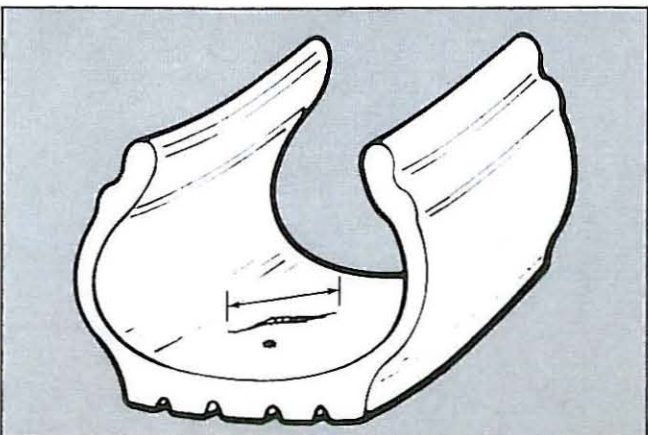
3 During the inspection process, locate and mark all injuries both inside and outside of the tire.

Tire Size	Non-Repairable Area
13.9 and smaller =	3" (75mm)
14.9-20.8 =	4" (100mm)
23.1 and larger =	5" (150mm)

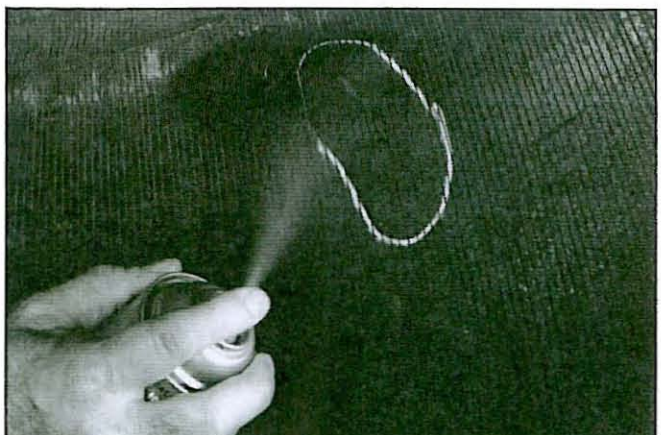
4 If the injury falls in the non-repairable area, the tire cannot be repaired. To determine the non-repairable area, measure the distance between the bead toe and the end of the injury on the inside of the tire.



5 If present, remove any injuring objects. To determine the extent of the damage and any possible ply separation, probe the injury using a blunt awl #917 or #918, from the inside and outside of the tire.



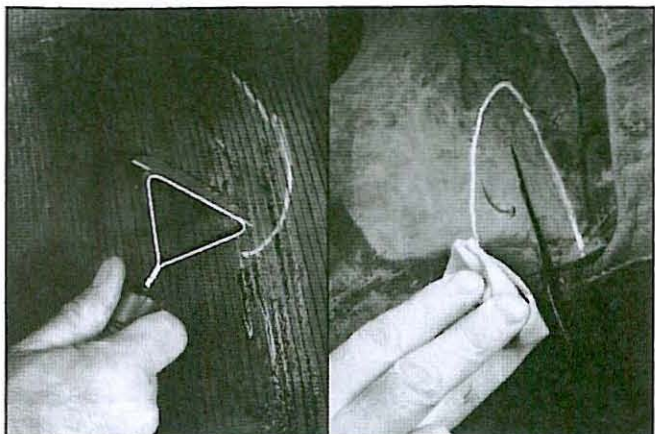
6 On the inside of the tire, measure the largest area of cord damage. Then refer to the BP Limitations Chart to determine if the injury is repairable.



7 When determined repairable, pre-clean the inner liner by applying Tech Rub-O-Matic Aerosol #704A to the injured area.

*A. The tire shows signs of run flat or underinflation.
 B. Ply separation is beyond repairable limitations.
 C. Bead damage is beyond repairable limits.
 D. Weather checking is present which exposes the cord.

E. Other section repairs have been made within the same quadrant of the tire.
 F. If the injury is larger than the repairable limitations of the Tech BP Repair Limitations Chart.



8 While the area is still moist, use the Tech scraper #933 to remove all contaminating substances. Also remove contaminating substances from the outside of the tire.



9 Exterior rubber removal is usually done with a rotary gouge. It is important that the gouge is sharpened before each use.

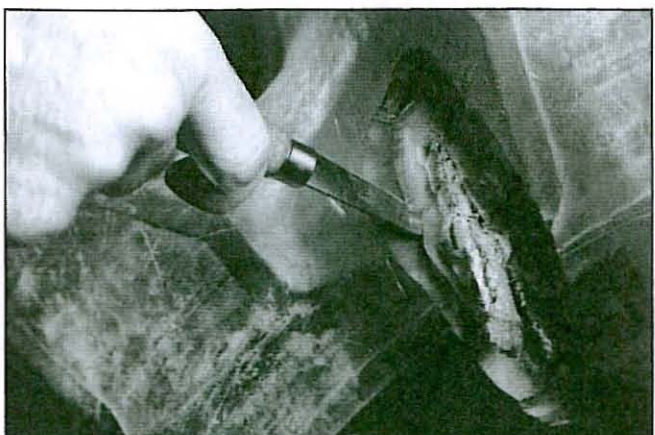


ALWAYS WEAR EYE PROTECTION WHEN BUFFING

10 Using a low r.p.m. (max. 5,000 r.p.m.) buffer, such as a Tech #S-1032 or #S-1036 air buffer, along with a rotary gouge #S-2045, remove the outer rubber around the perimeter of the injury just above the construction plies of the tire.*



11 After the exterior rubber has been removed, probe the injury to expose any hidden damage.



12 Using a Tech skiver #940, or #941, remove only damaged cord body from the tire at a 90 degree angle to the tire. If the injury is narrow, simply use a pencil rasp to remove damage.



13 Use a RUBBERHOG Rasp #RH-625 or a #RH-505 on a Tech low r.p.m. air tool to remove any irregularities, to texturize the 90 degree area, and to round off the ends of the skive. Rounding off the ends of the skive prevents injury growth after repair. To keep the size of the injury as small as possible, it is important to use a Y-skive whenever possible.

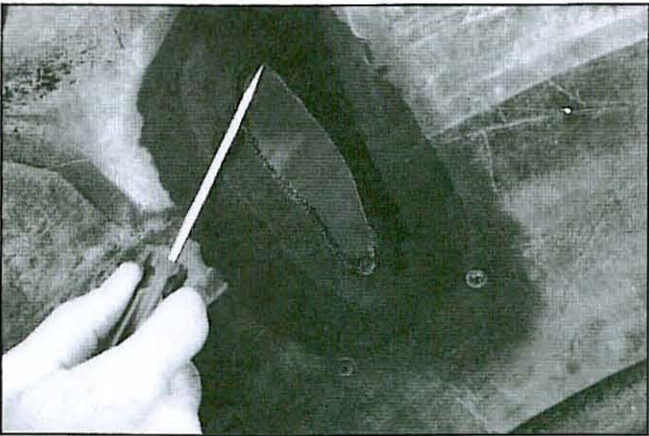
*Another method of quickly removing surface rubber is to use a coarse gritted RUBBERHOG rasp (390 SSG) on a low r.p.m. air tool.



14 To achieve an RMA #3 texture, use a RUBBERHOG rasp on a low r.p.m. air buffer and dress the rubber of the skive at a 45 degree angle.



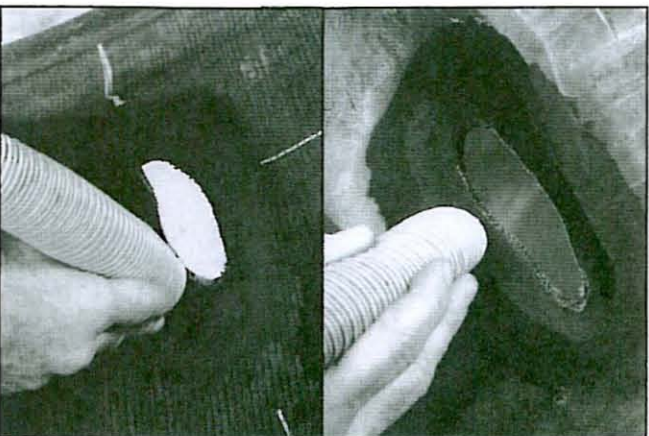
15 With the same rasp or an inner liner wheel, lightly buff a perimeter around the skive area approximately 1 1/2" (40mm).



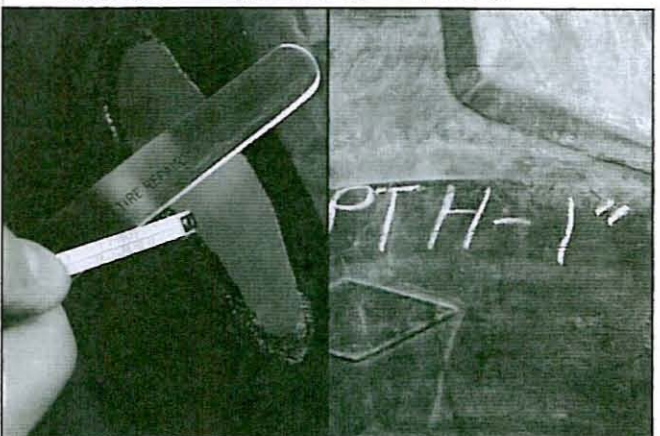
16 Use a blunt probe to inspect the injury to make sure that all damaged material has been removed.



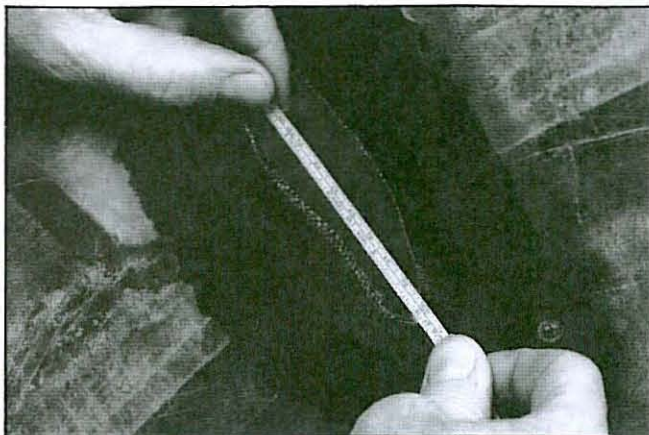
17 Draw crayon index lines at right angles from the skive on the inside of the tire to aid in centering the spotter and repair unit. Using an RH-106 inner liner wheel (on tubeless tires) or an S-947 inner liner wheel mounted on a low r.p.m. (max. 5,000 r.p.m.) air buffer, buff a perimeter around the injury on the inner liner approximately 1 1/2" (40mm).



18 Vacuum the buffing debris from the inside and outside of the tire.



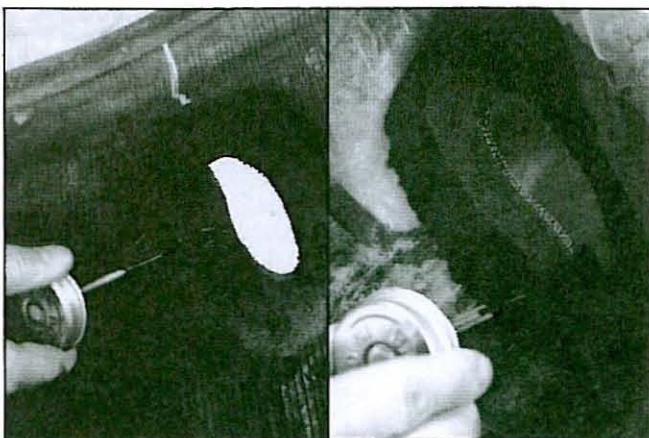
19 Measure the depth of the injury at the deepest point of the skive so that a cure time can be calculated after the skive has been filled. Write the measurement on the outside of the tire.



20 Measure the size of the injury at the largest damage to the cord body. Do not measure across the 45 degree angle. Measure only the cord damage of the fabric area. You also need to know the ply rating of the tire to properly use the chart.



22 Write the size of repair unit on the outside of the tire.



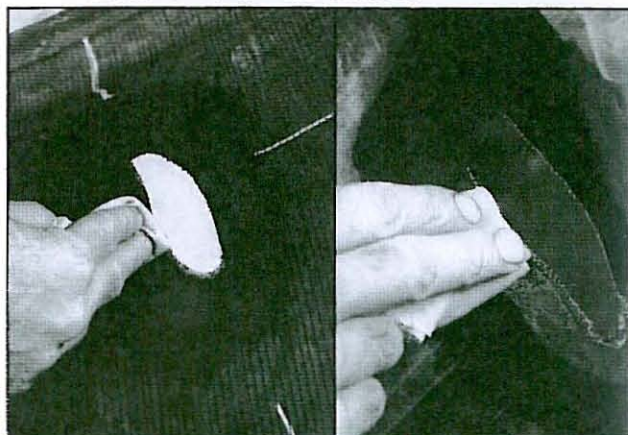
24 Apply a thin, even coat of vulcanizing fluid to the inside and outside of the tire using either Tech Tem Vulc #1082 or Tech Vulcanizing Fluid #760 and allow to dry thoroughly.*

*A. Tech Tem Vulc #1082 — When applying Tem Vulc black vulcanizing fluid, allow approximately 10 to 20 minutes drying time (longer in humid climates). Double the drying time if the vulcanizing fluid is being applied to exposed cord body.

FARM — MPT — TRACTOR
SIZE OF INJURY — TREAD, SHOULDER AND SIDEWALL

PLY RATING	1/4"				3/8"				1/2"				3/4"				1"			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
4	402	407	412	417	422	427	432	437	442	447	452	457	462	467	472	477	482	487	492	497
6	602	607	612	617	622	627	632	637	642	647	652	657	662	667	672	677	682	687	692	697
8	802	807	812	817	822	827	832	837	842	847	852	857	862	867	872	877	882	887	892	897
10	1002	1007	1012	1017	1022	1027	1032	1037	1042	1047	1052	1057	1062	1067	1072	1077	1082	1087	1092	1097
12	1202	1207	1212	1217	1222	1227	1232	1237	1242	1247	1252	1257	1262	1267	1272	1277	1282	1287	1292	1297
14	1402	1407	1412	1417	1422	1427	1432	1437	1442	1447	1452	1457	1462	1467	1472	1477	1482	1487	1492	1497
16	1602	1607	1612	1617	1622	1627	1632	1637	1642	1647	1652	1657	1662	1667	1672	1677	1682	1687	1692	1697

21 Instructions for using the Tech B.P.T. chart are as follows:
A. Locate the tire's ply rating on the extreme left column of the B.P.T. chart.
B. Locate the injury size along the top horizontal column of the same chart.
C. The repair unit number in the square where these two columns intersect is the proper repair unit to use.



23 Using a clean lint-free cloth, clean the skive area thorough on the inside and outside of the tire with Tech Rub-O-Matic #704. Allow approximately 3 to 5 minutes drying time. Double the drying time if there is any exposed cord body.

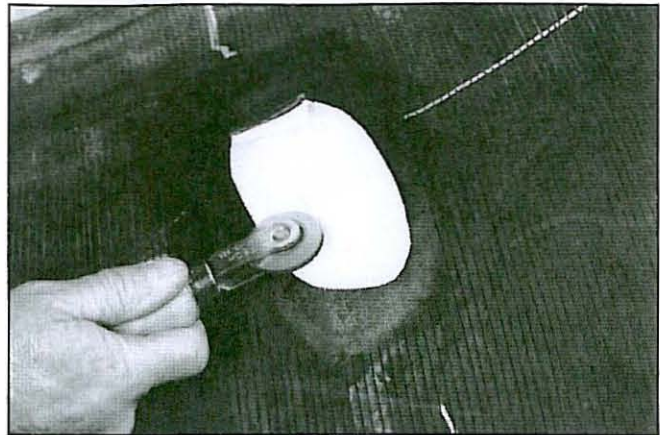


25 Using 1/8" (3mm) thick Vul-Gum, cut enough strips to fill tire skive. Preheat the Vul-Gum to approximately 120 degrees 130 degrees F (49 degrees to 55 degrees C).

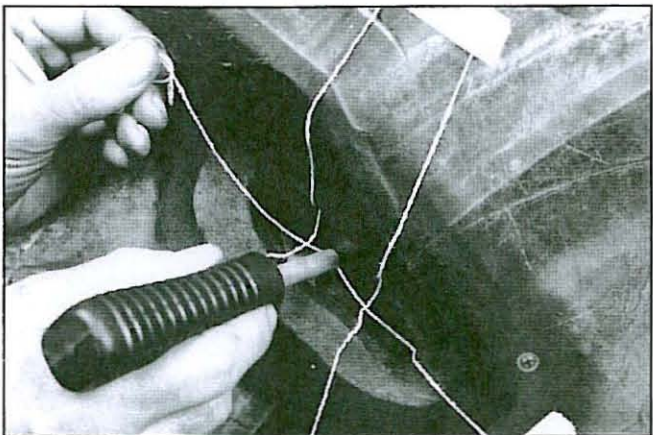
*B. Tech Chemical Vulcanizing Fluid #760 — When using Chemical Vulcanizing Fluid, allow approximately 3 to 5 minutes for drying time (long for humid climates). Apply two coats and double the drying time when being applied to exposed cord body.



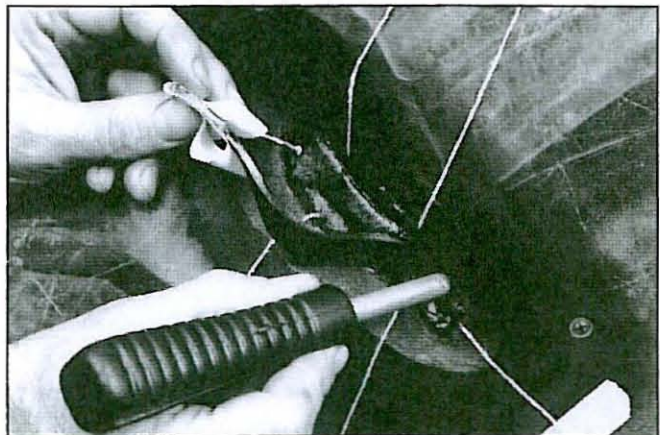
26 Using Tech Vul-Gum $\frac{1}{8}$ " (3mm) thick, cut a platform of Vul-Gum 1" (25mm) larger than the skive opening on the inner liner of the tire. Center the platform over the skive. Press the platform down with your thumb.



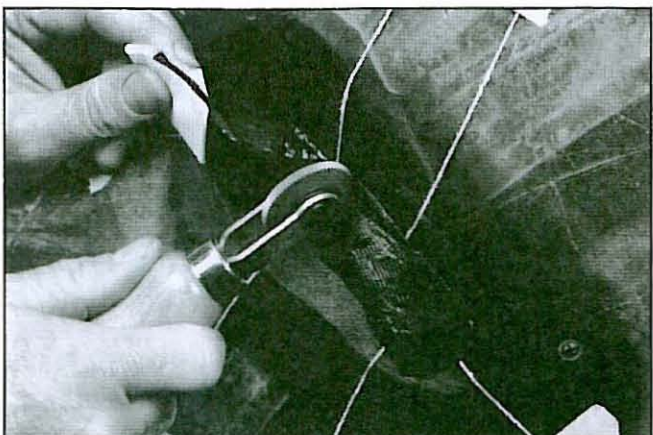
27 Stitch the platform from the center out using a Tech Stitcher.



28 On the outside of the tire, place vent strings down into the injury, most importantly the cord body to release intra ply pressure (air trapped within the cord body of the tire). Tape the ends of the cords to the outside of the tire approximately 3" (75mm) away from the skive.



29 Pack the Vul-Gum into the skive with a blunt object such as a skive packing tool #987. Do not try to fill too large an area as air may become trapped in the rubber. Fill to a point where you can switch to a stitcher.



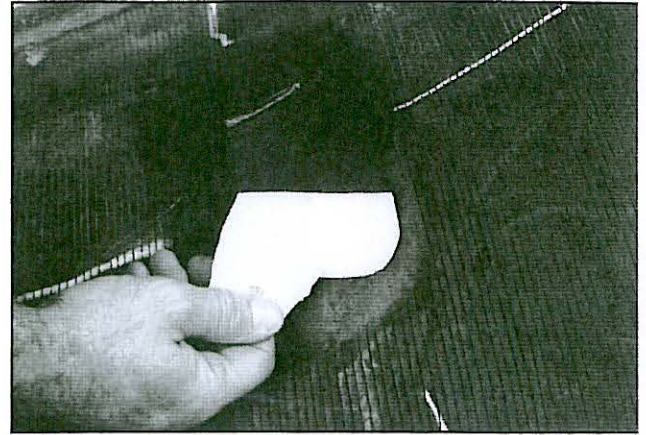
30 Finish the filling process using a Tech stitcher. Avoid stretching the Vul-Gum during the filling process.



31 Fill to a point where the rubber is approximately $\frac{1}{8}$ " (3mm) to $\frac{1}{4}$ " (6mm) above the tire's surface, and the highest point is in the center of the skive fill. In shoulder injuries it may be necessary to fill the skive to $\frac{3}{8}$ " (9mm) to assure proper pressure during the cure.



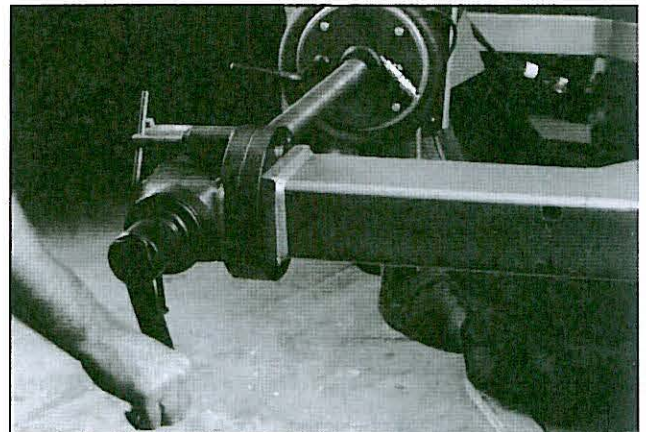
32 Fill the area between the lugs of the tire using plaster of paris or aluminum foil. This is done to stop the flow of rubber during the curing process. If rubber were to flow during the curing process, a loss of pressure during the cure would result. This is only necessary for shoulder and tread injuries.



33 Remove the white polyethylene protective covering.

EXAMPLE	
Platform	= 1/8" (3mm)
Section Depth	= 1" (25mm)
Overbuild	= 3/8" (9mm)
Total	1 1/2" (37mm)
1 1/2" = 12/8"	
12 X 10 = 120 minutes	

34 Determine the cure time needed to vulcanize the uncured Vul-Gum. The cure rate for Tech Vul-Gum is 10 minutes for every 1/8" (3mm) of thickness. When using a cold spotter, you will need to also determine the manufacturer's recommended warm-up time.



35 Center the spotter over the skive fill with the proper contour plates or with the #S-1027. Adjust the contour plates to fit the contour of the tire. Heating elements should be checked periodically to make sure that they are working properly.



36 If an air spotter is used, connect the air line. If a manual spotter is used, it will be necessary to retighten the spotter after 5 to 10 minutes.



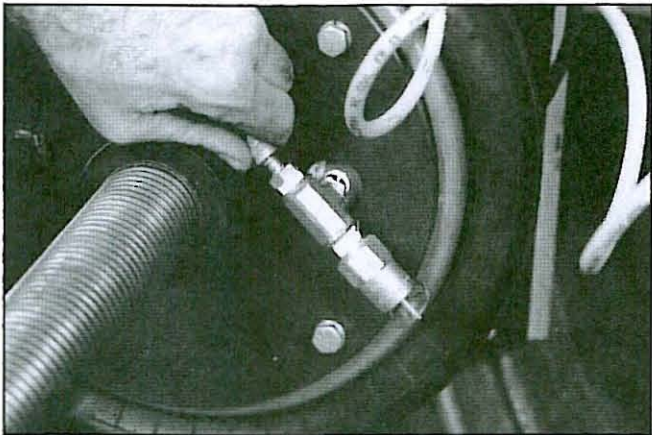
37 Connect the electric connections to the inside and outside heat elements.



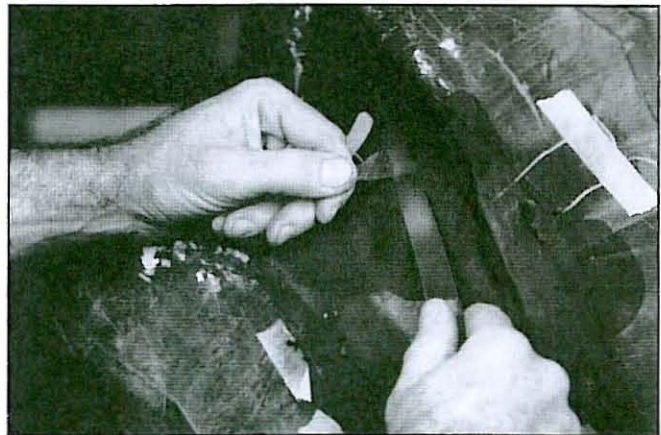
38 Turn the Position/Vulcanize switch to the Vulcanize position.



39 Set the timer for the allotted cure time.



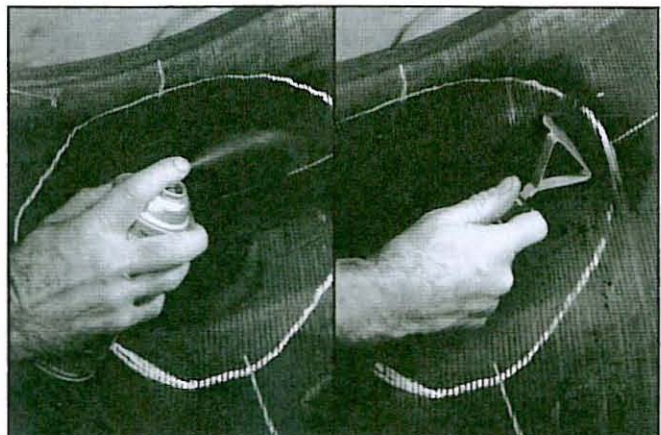
40 After the allotted time, disconnect the air line and remove the spotter from the tire. Allow the tire to cool down.



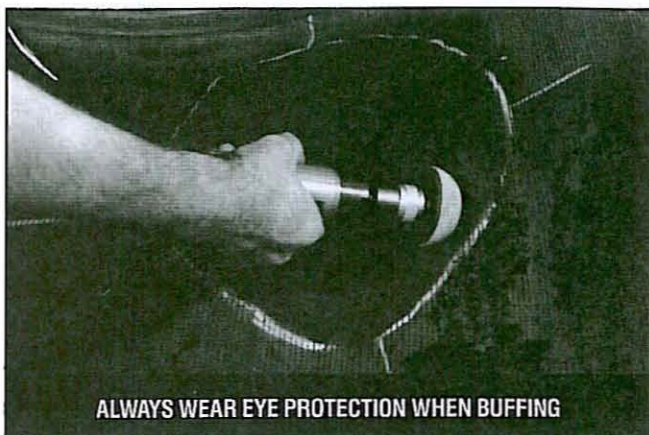
41 Cut any overflow away from the tire. This step is usually not necessary when using an air spotter. Check for proper cure.



42 Using the index lines, center the previously determined repair unit over the injury and draw a perimeter approximately 1" (25mm) around the circumference of the repair unit. This is to be used as a guide for mechanical buffing.

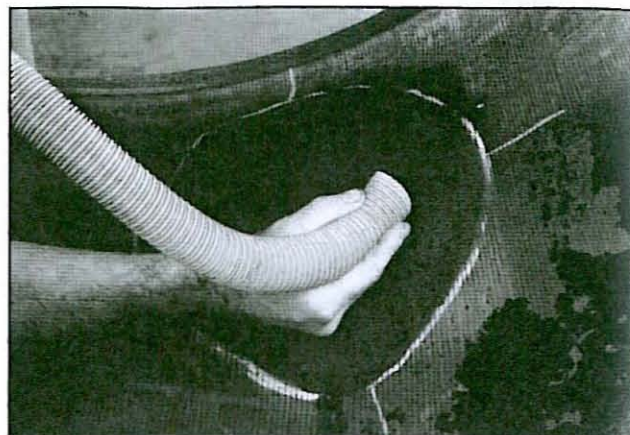


43 Pre-clean within the marked area by applying Tech Rub-O-Matic aerosol #704A.

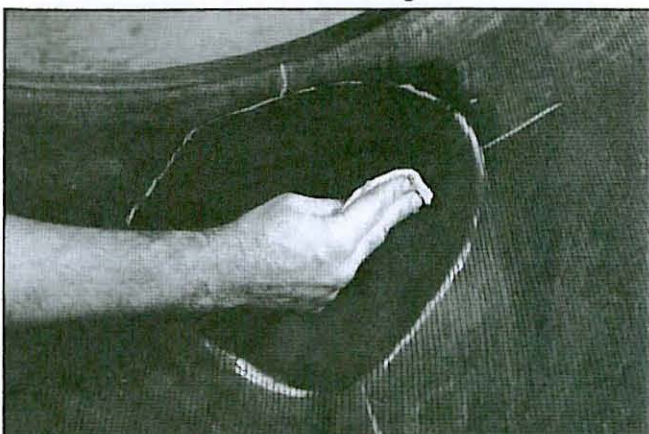


ALWAYS WEAR EYE PROTECTION WHEN BUFFING

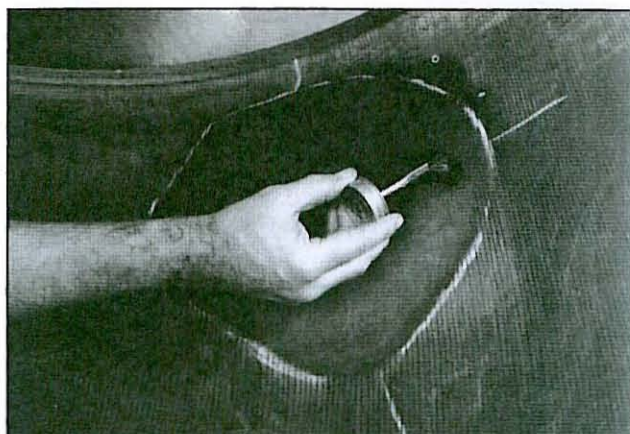
44 Using a low r.p.m. air buffer (max. 5,000 r.p.m.), mechanically buff within the marked area with the Tech RUBBERHOG #RH-106. Buff away the platform to achieve an even, velvet texture. Also remove any vent ribs and/or embossed surfaces. **Note:** In a tube type tire, use an #S-947 inner liner wheel for buffing.



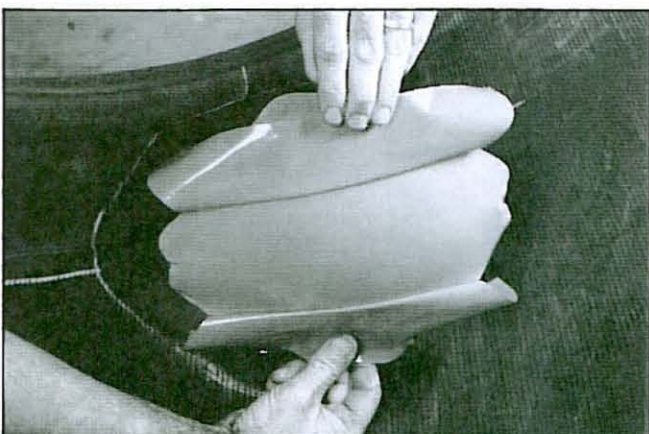
45 Vacuum the entire buffed area and surrounding area. Remove debris from the tire.



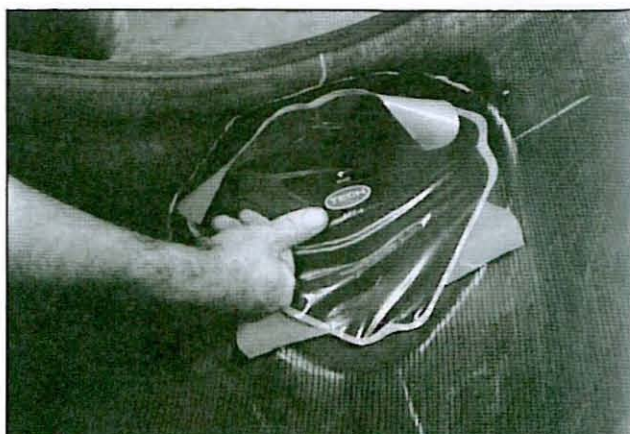
46 Clean the entire area with Tech Rub-O-Matic #704 and a clean, lint-free cloth. Always clean from the center out. Make sure the surface is cleaned thoroughly. Allow 3 to 4 minutes for the solvent to evaporate. (Double the time for tube type tires if there is exposed fabric).



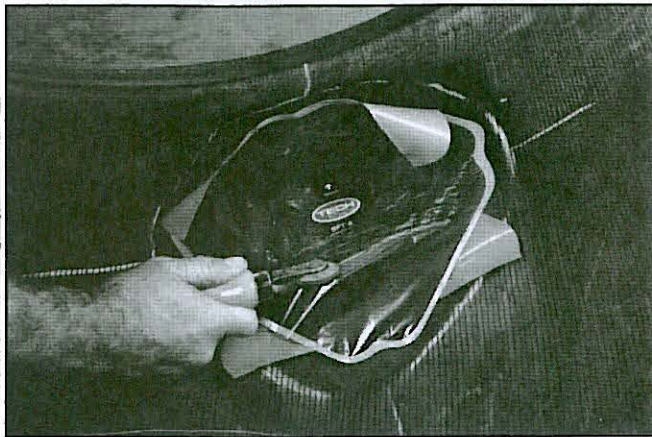
47 Apply a thin, even coat of Tech Chemical Vulcanizing Fluid #760 to the prepared area. Allow approximately 3 to 5 minutes for drying time. For tube type tires, two coats should be applied and drying time should be doubled. It is important that the Vulcanizing Fluid is completely dry.



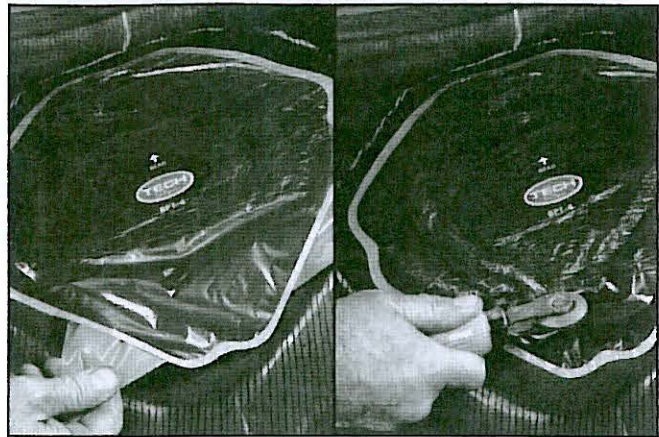
48 Break the perforation and roll the blue poly backing on the repair unit approximately half way back. This will allow you to handle the repair unit without contaminating the gray cushion gum.



49 With the bead arrow aligned with either bead of the tire, center the repair unit over the injury using the index lines. Press down the repair unit with your thumb or the side of your hand.



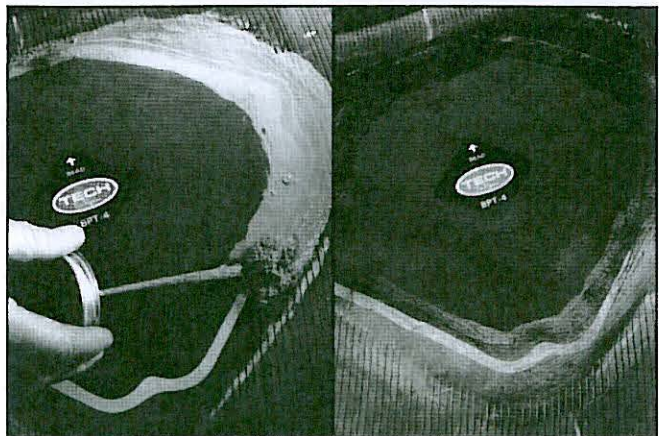
50 Stitch the repair unit into place from the center outward. Exert firm pressure on the stitcher during this process to promote increased adhesion and to remove air from underneath the repair.



51 Remove the remainder of the poly and finish stitching the repair unit into place.



52 Remove the protective clear poly from the top of the repair unit.



53 If the tire is tubeless, apply a coat of Tech Security Coat #738 to the outer edge of the repair unit and to the buffed surface beyond the repair unit's edge. This process assures good air retention. If the tire is tube type, you must cover the repair unit with Tech Tire Talc #706.



54 Mechanically buff the section on the outside of the tire down even with tire's original surface. The buffing wheel should be turning from the center of the section to the tire's surface to prevent the buffing wheel from attacking the edge of the filler rubber.



55 The tire is now ready to be returned to service. If all of the procedures in this manual have been followed correctly, the repair will last the life of the tire.

NOTE: Use the following as a trouble shooting guide:

- | | | |
|--|--|---|
| A. Porosity (Tiny air bubbles, pits or gummy) | B. Large Air Pockets | C. Poor Bond to the Skive Area of Cured Rubber |
| 1. Lack of pressure | 1. Skive was improperly filled (trapped air) | 1. Wet cement |
| 2. Lack of heat | | 2. No cement |
| 3. Not enough cure time | | 3. Contaminated surface |
| | | 4. Uncured rubber was defective |

If you have
any questions
regarding this
repair process,
call Tech's repair
hotline
1-800-433-TECH
or
1-800-336-TECH.

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When your tires need more than an

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